

Title (en)  
AUTOMATED CLASSIFICATION AND TAXONOMY OF 3D TEETH DATA USING DEEP LEARNING METHODS

Title (de)  
AUTOMATISIERTE KLASSIFIZIERUNG UND TAXONOMIE VON 3D-ZAHNDATEN MIT TIEFLERNVERFAHREN

Title (fr)  
CLASSIFICATION ET TAXONOMIE AUTOMATISÉES DE DONNÉES DE DENTS 3D À L'AIDE DE PROCÉDÉS D'APPRENTISSAGE PROFOND

Publication  
**EP 3692463 A2 20200812 (EN)**

Application  
**EP 18778536 A 20181002**

Priority  
• EP 17194460 A 20171002  
• EP 2018076871 W 20181002

Abstract (en)  
[origin: EP3462373A1] The invention relates to a computer-implemented method for automated classification of 3D image data of teeth comprising: a computer receiving one or more of 3D image data sets, a 3D image data set defining an image volume of voxels, the voxels defining a 3D tooth model within the image volume, the image volume being associated with a 3D coordinate system; the computer pre-processing each of the 3D image data sets, the pre-processing including positioning and orienting each of the 3D tooth models in the image volume on the basis of the morphology of teeth, preferably the 3D shape of a tooth and/or a slice of the 3D shape; and, the computer providing each of the pre-processed 3D image data sets to the input of a trained deep neural network and the trained deep neural network classifying each of the pre-processed 3D image data sets on the basis of a plurality of candidate tooth labels of the dentition, wherein classifying a 3D image data set includes generating for each of the candidate tooth labels an activation value, an activation value associated with a candidate tooth label defining the likelihood that the 3D image data set represents a tooth type as indicated by the candidate tooth label. The candidate tooth labels possibly being used to determine the most feasible assignment of labels to 3D image data sets in the case of all 3D image data sets originating from a single dentition.

IPC 8 full level  
**G06V 10/26** (2022.01)

CPC (source: EP IL KR US)  
**A61B 6/466** (2013.01 - KR US); **A61B 6/51** (2024.01 - KR US); **G06F 18/2413** (2023.01 - KR); **G06N 3/042** (2023.01 - KR); **G06N 3/045** (2023.01 - KR); **G06N 3/08** (2013.01 - KR US); **G06T 7/0012** (2013.01 - KR US); **G06T 7/11** (2017.01 - KR US); **G06T 11/005** (2013.01 - KR US); **G06T 11/008** (2013.01 - KR US); **G06V 10/26** (2022.01 - EP IL KR US); **G06V 10/454** (2022.01 - EP IL KR US); **G06V 10/82** (2022.01 - EP KR US); **G06V 20/653** (2022.01 - EP IL KR US); **G06T 2200/04** (2013.01 - KR US); **G06T 2207/10072** (2013.01 - KR US); **G06T 2207/20081** (2013.01 - KR US); **G06T 2207/20084** (2013.01 - KR US); **G06T 2207/30036** (2013.01 - KR US); **G06V 2201/033** (2022.01 - EP IL KR)

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3462373 A1 20190403**; BR 112020006544 A2 20200929; CA 3078095 A1 20190411; CN 111328397 A 20200623; EP 3692463 A2 20200812; IL 273646 A 20200531; JP 2020535897 A 20201210; JP 7412334 B2 20240112; KR 20200108822 A 20200921; US 11568533 B2 20230131; US 2020320685 A1 20201008; WO 2019068741 A2 20190411; WO 2019068741 A3 20190516

DOCDB simple family (application)  
**EP 17194460 A 20171002**; BR 112020006544 A 20181002; CA 3078095 A 20181002; CN 201880073106 A 20181002; EP 18778536 A 20181002; EP 2018076871 W 20181002; IL 27364620 A 20200326; JP 2020519080 A 20181002; KR 20207012706 A 20181002; US 201816652886 A 20181002